AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A speech coding apparatus for coding an input signal consisting of one of a speech signal and a voice-band non-speech signal, said speech coding apparatus comprising:

~~discriminating means~~ a discriminator for deciding as to whether the input signal is a speech signal or a non-speech signal;

a frequency parameter ~~generating means~~ generator for outputting, when the input signal is the speech signal, frequency parameters that indicate characteristics of a frequency spectrum of the speech signal, and for outputting, when the input signal is the non-speech signal, frequency parameters obtained by correcting frequency parameters that indicate characteristics of a frequency spectrum of the non-speech signal;

a quantization codebook for storing codewords of a predetermined number of frequency parameters; and

~~quantization means~~ a quantizer for selecting codewords corresponding to the frequency parameters output from said

frequency parameter generating means by referring to said quantization codebook.

2. (Original) The speech coding apparatus according to claim 1, wherein the frequency parameters are line spectral pairs.

3. (Currently Amended) The speech coding apparatus according to claim 1, wherein said frequency parameter ~~generating means~~ generator comprises a correcting section for interpolating frequency parameters between the frequency parameters of the input signal and frequency parameters of white noise when the input signal is the non-speech signal, and for replacing the frequency parameters of the input signal by the frequency parameters interpolated.

4. (Currently Amended) The speech coding apparatus according to claim 1, wherein said frequency parameter ~~generating means~~ generator comprises a linear prediction analyzer for computing linear prediction coefficients from the input signal, at least one bandwidth expanding section for carrying out bandwidth expansion of the linear prediction coefficients when the input signal is the non-speech signal; and at least one converter for generating line spectral pairs from the linear prediction

coefficients passing through the bandwidth expansion as the frequency parameters.

5. (Currently Amended) The speech coding apparatus according to claim 1, wherein said frequency parameter ~~generating means~~ generator comprises at least one white noise superimposing section for superimposing white noise on the input signal when the input signal is the non-speech signal, and at least one linear prediction analyzer for computing linear prediction coefficients from the input signal on which the white noise is superimposed.

6. (Currently Amended) The speech coding apparatus according to claim 1, wherein said ~~quantization means~~ quantizer comprises a first quantization section for selecting, when the input signal is the speech signal, codewords of the input signal according to the frequency parameters of the speech signal by referring to quantization codebook, and a second quantization section for selecting, when the input signal is the non-speech signal, codewords of the input signal according to the frequency parameters of the non-speech signal by referring to quantization codebook.

7. (Currently Amended) The speech coding apparatus according to claim 1, further comprising a non-speech signal detector for detecting a type of the non-speech signal from the input signal, wherein said frequency parameter ~~generating means~~ generator comprises a correcting section for correcting, when the input signal is the non-speech signal, the frequency parameters of the input signal according to the type of the non-speech signal detected by the non-speech signal detector.

8. (Currently Amended) The speech coding apparatus according to claim 1, further comprising ~~selecting means~~ a selector for selecting a codeword that will minimize quantization distortion from a plurality of codewords, wherein

said frequency parameter ~~generating means~~ generator comprises ~~correcting means~~ a corrector for correcting the frequency parameters of the non-speech signal when the input signal is the non-speech signal, said ~~correcting means~~ corrector including one of three sets consisting of a plurality of correcting sections, a plurality of bandwidth expansion sections and a plurality of white noise superimposing sections, said correcting sections correcting the frequency parameters of the non-speech signal with different interpolation characteristics between the frequency parameters of the input signal and

frequency parameters of white noise, said bandwidth expansion sections carrying out bandwidth expansion of the non-speech signal by different characteristics, and said white noise superimposing sections superimposing different level white noises on the input signal, and said frequency parameter ~~generating means~~ generator generates the frequency parameters of a plurality of non-speech signal streams from the outputs of the ~~correcting means~~ corrector;

said ~~quantization means~~ quantizer includes a plurality of quantization sections for selecting codewords corresponding to the frequency parameters of the non-speech signal streams, and for outputting the codewords with quantization distortions at that time; and

said ~~selecting means~~ selector selects codeword that will minimize quantization distortion from the plurality of codewords selected by said quantization sections.

9. (Currently Amended) A speech coding apparatus for coding an input signal consisting of one of a speech signal and a voice-band non-speech signal, said speech coding apparatus comprising:

~~discriminating means~~ a discriminator for deciding as to whether the input signal is a speech signal or a non-speech signal;

a frequency parameter ~~generating means~~ generator for generating frequency parameters that indicate characteristics of a frequency spectrum of the input signal;

a quantization codebook for storing codewords of a predetermined number of frequency parameters;

at least one codebook subset including a subset of the codewords stored in the quantization codebook; and

~~quantization means~~ a quantizer for selecting, when said input signal is the speech signal, codewords corresponding to the frequency parameters of the input signal by referring to said quantization codebook, and for selecting, when said input signal is the non-speech signal, codewords corresponding to the frequency parameters of the input signal by referring to said codebook subset.

10. (Original) The speech coding apparatus according to claim 9, wherein the frequency parameters are line spectral pairs.

11. (Original) The speech coding apparatus according to claim 9, wherein said codebook subset consists of codewords selected from among the codewords in said quantization codebook, the codewords selected having small quantization distortion involved in quantizing the frequency parameters of the non-speech signal.

12. (Currently Amended) The speech coding apparatus according to claim 9, further comprising a codeword ~~selecting means~~ selector for adaptively selecting, from among the codewords in said quantization codebook, codewords with small quantization distortion involved in quantizing the frequency parameters of the non-speech signal, wherein said codebook subset includes the codewords output from said codeword ~~selecting means~~ selector.

13. (Currently Amended) The speech coding apparatus according to claim 9, further comprising a non-speech signal detector for detecting a type of the non-speech signal from the input signal, wherein

said codebook subset includes a plurality of codebook subsets corresponding to the types of the non-speech signal detected by said non-speech signal detector; and

said ~~quantization means~~ quantizer includes a selector for selecting, when the input signal is the non-speech signal, one of said plurality of codebook subsets according to the type of the non-speech signal detected by said non-speech signal detector, in order to detect a codeword corresponding to the frequency parameters of the non-speech signal.

14. (Currently Amended) The speech coding apparatus according to claim 12, further comprising a correcting section for correcting the frequency parameters of the non-speech signal, wherein according to the frequency parameters after the correction by said correcting section, said codeword ~~selecting means~~ selector adaptively selects, from among the codewords in said quantization codebook, codewords that will cause small quantization distortion in quantizing the frequency parameters of the non-speech signal, and supplies the selected codewords to said codebook subset.

15. (Currently Amended) The speech coding apparatus according to claim 12, further comprising a second frequency parameter ~~generating means~~ generator for generating frequency parameters by interpolating between the frequency parameters of the input signal and frequency parameters of white noise, wherein

said codeword ~~selecting means~~ selector quantizes the frequency parameters generated by said second frequency parameter ~~generating means~~ generator, and selects the codewords of said codebook subset considering quantization distortion involved in the quantization.

16. (Currently Amended) The speech coding apparatus according to claim 12, further comprising a second frequency parameter ~~generating means~~ generator including a linear prediction analyzer for computing linear prediction coefficients from the input signal, a bandwidth expansion section for carrying out bandwidth expansion of the linear prediction coefficients, and a converter for generating, as the frequency parameters, line spectral pairs from the linear prediction coefficients passing through the bandwidth expansion, wherein

said codeword ~~selecting means~~ selector quantizes the frequency parameters generated by said second frequency parameter ~~generating means~~ generator, and selects the codewords of said codebook subset considering quantization distortion involved in the quantization.

17. (Currently Amended) The speech coding apparatus according to claim 12, further comprising a second frequency parameter ~~generating means~~ generator including a white noise superimposing section for superimposing white noise on the input signal, and a converter for generating the frequency parameters from the input signal on which the white noise is superimposed, wherein

said codeword ~~selecting means~~ selector quantizes the frequency parameters generated by said second frequency

parameter ~~generating means~~ generator, and selects the codewords of said codebook subset considering quantization distortion involved in the quantization.

18. (Currently Amended) The speech coding apparatus according to claim 9, wherein

said frequency parameter ~~generating means~~ generator comprises:

a linear prediction analyzer for computing linear prediction coefficients from the input signal; and

an LPC-to-LSP converter for converting the linear prediction coefficients into line spectral pairs used as the frequency parameters; and wherein

said ~~quantization means~~ quantizer comprises:

an inverse synthesis filter for carrying out inverse synthesis filtering of the input signal according to filtering characteristics based on the linear prediction coefficients when the input signal is the non-speech signal;

an LSP inverse-quantization section for generating line spectral pairs by dequantizing codewords in said codebook subset when the input signal is the non-speech signal;

an LSP-to-LPC converter for converting the line spectral pairs generated by said LSP inverse-quantization section into linear prediction coefficients;

a synthesis filter for carrying out synthesis filtering of the signal generated by said inverse synthesis filter according to filtering characteristics based on the linear prediction coefficients output from said LSP-to-LPC converter; and

a distortion minimizing section for selecting codewords that will minimize quantization distortion when the input signal is the non-speech signal according to errors between the input signal and the speech signal synthesized by said synthesis filter.

19. (Currently Amended) The speech coding apparatus according to claim 9, wherein

said frequency parameter ~~generating means~~ generator comprises:

a linear prediction analyzer for computing linear prediction coefficients from the input signal; and

an LPC-to-LSP converter for converting the linear prediction coefficients into line spectral pairs used as the frequency parameter; and wherein

said quantization means comprises:

an inverse synthesis filter for carrying out inverse synthesis filtering of the input signal according to filtering characteristics based on the linear prediction coefficients when the input signal is the non-speech signal;

an LSP inverse-quantization section for generating line spectral pairs by dequantizing codewords in said codebook subset when the input signal is the non-speech signal;

an LSP-to-LPC converter for converting the line spectral pairs generated by said LSP inverse-quantization section into linear prediction coefficients;

a synthesis filter for carrying out synthesis filtering of the signal generated by said inverse synthesis filter according to filtering characteristics based on the linear prediction coefficients output from said LSP-to-LPC converter;

a first non-speech signal detector for detecting a non-speech signal from the input signal;

a second non-speech signal detector for detecting a non-speech signal from the speech signal output from said synthesis filter; and

a comparator for selecting codewords that will make a type of the non-speech signal that is detected by said first

non-speech signal detector identical to a type of the non-speech signal that is detected by said second non-speech signal detector.

20. (Currently Amended) The speech coding apparatus according to claim 9, further comprising ~~optimization means~~ an optimizer for causing said quantization means to select optimum codewords according to a closed loop search method by comparing the input signal with a signal that is decoded from the codewords selected by said ~~quantization means~~ quantizer.

21. (New) A speech coding method for coding input signals including at least one speech signal and at least one voice-band non-speech signal, said method comprising:

classifying each of the input signals as speech or non-speech;

obtaining frequency parameters characterizing a frequency spectrum for each of the classified input signals; and

referring to a common quantization codebook to select codewords corresponding to the frequency parameters obtained for both the input signals classified as speech and non-speech.

22. (New) The method according to claim 21, wherein the obtaining frequency parameters further comprises:

for each of the input signals classified as non-speech, performing the following:

interpolating frequency parameters between the frequency parameters of the input signal and frequency parameters of white noise; and

replacing the frequency parameters of the input signal with the interpolated frequency parameters.

23. (New) The method according to claim 21, wherein the obtaining frequency parameters is performed by:

computing linear prediction coefficients from the input signals;

carrying out bandwidth expansion of the linear prediction coefficients of each of the input signals classified as non-speech; and

generating line spectral pairs for both the linear prediction coefficients of the input signals classified as speech and the bandwidth-expanded linear prediction coefficients of the input signals classified as non-speech.

24. (New) The method according to claim 21, further comprising:

superimposing white noise on each of the input signals classified as non-speech,

wherein the obtaining frequency parameters is performed by:

computing linear prediction coefficients of both the input signals classified as speech and the input signals classified as non-speech, on which white noise is superimposed; and

generating line spectral pairs from the computed linear prediction coefficients.

25. (New) The method according to claim 21, wherein the referring to a common quantization codebook is performed for each of the input signals classified as non-speech by:

removing codewords from the quantization codebook that are capable of causing large frequency distortion for non-speech signals; and

using, to select the codewords for the input signal from the common quantization codebook, indices that are also used to select the codewords for the input signals classified as speech.

26. (New) The method according to claim 21, wherein the referring to a common quantization codebook is performed for each of the input signals classified as non-speech by:

extracting a subset of codewords from the quantization codebook that are not capable of causing large frequency distortion for non-speech signals; and

selecting the codewords for the input signal from the extracted subset using indices, which are also used to select the codewords from the common quantization codebook for the input signals classified as speech.